

# C1 Exercise 4A

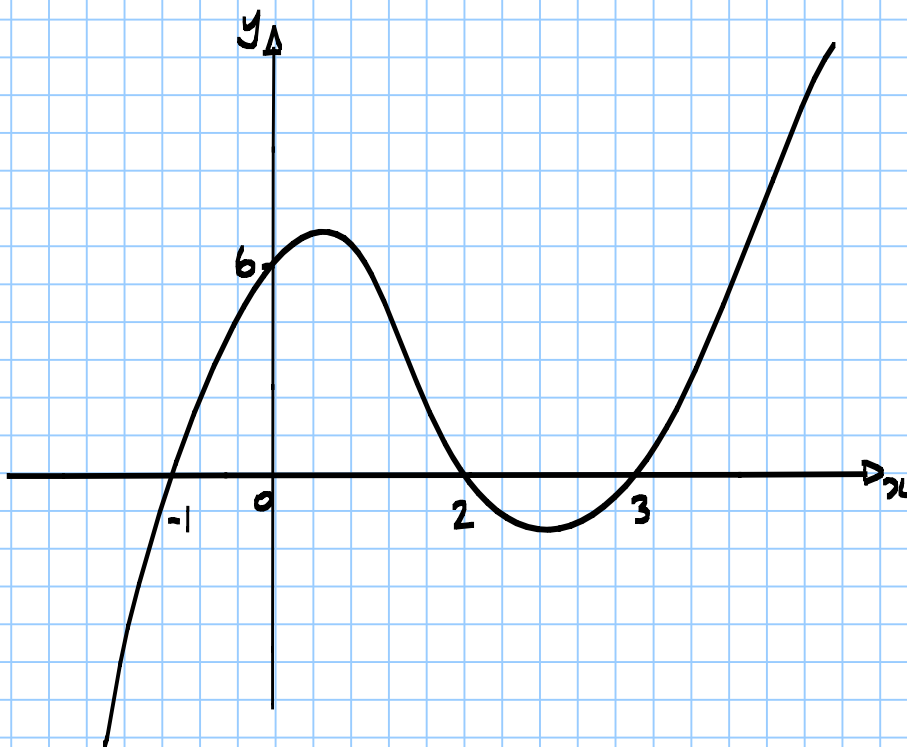
Note Title

1a  $y = (x-3)(x-2)(x+1)$

$x = 3$ ,  $x = 2$ ,  $x = -1$  are zeros.

$-3 \times -2 \times 1 = 6$  so y-intercept at 6.

$1x^3$  so  $\sim$  shape



1b

1c

1d

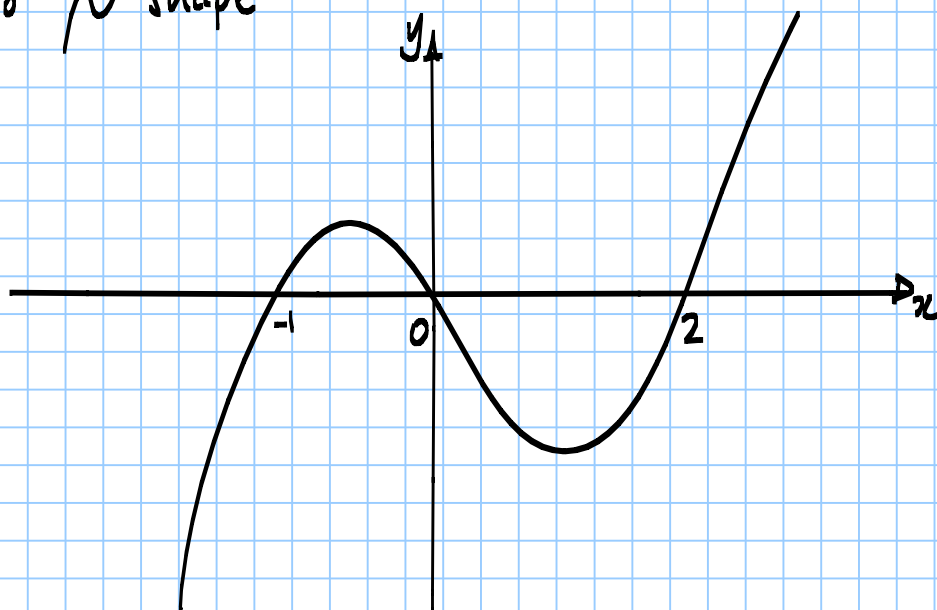
1e

1f  $y = x(x-2)(x+1)$

'zeros' or roots at  $x=0$   $x=2$   $x=-1$

y-intercept is 0

$1x^3$  so  $\sim$  shape

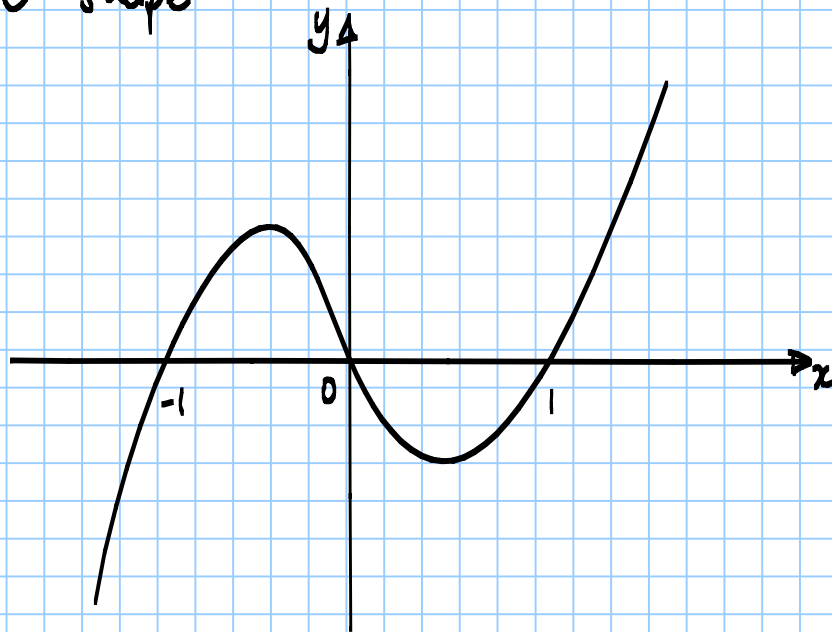


1g  $y = x(x+1)(x-1)$

'zeros' or 'roots' at  $x=0$   $x=-1$   $x=1$

y-intercept  $0 \times 1 \times -1 = 0$

$1x^3$  so  $\sim$  shape

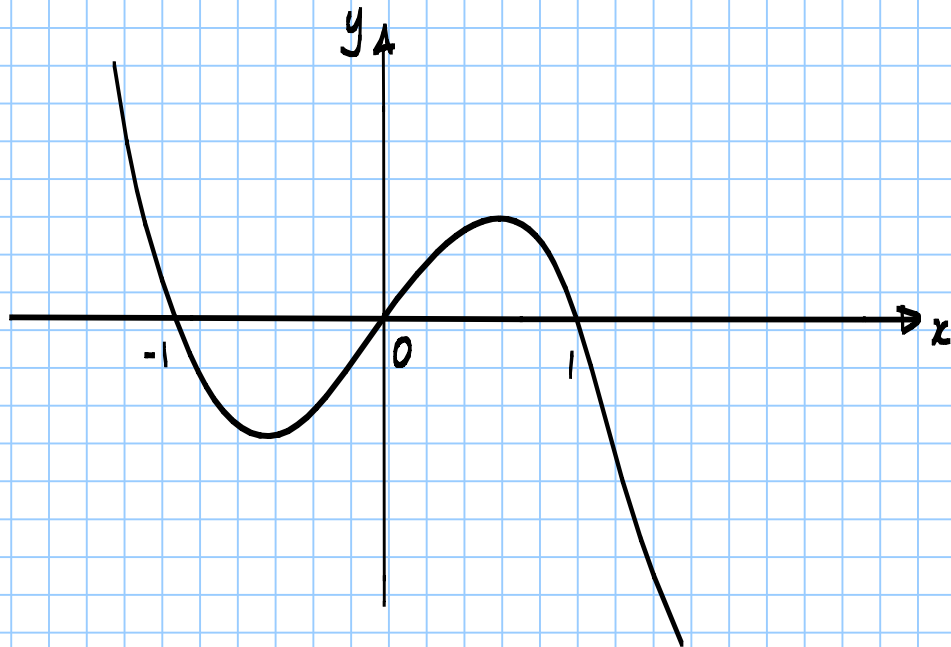


1h  $y = x(x+1)(1-x)$

roots at  $x=0$   $x=-1$   $x=1$

y-intercept at  $0 \times 1 \times 1 = 0$

$-x^3$  so  $\cup$  shape





1:  $y = (x-2)(\underline{2x-1})(\underline{2x+1})$

zeros at  $x=2$   $x=\frac{1}{2}$

$$\begin{aligned} 2x-1 &= 0 \\ 2x &= 1 \\ x &= \frac{1}{2} \end{aligned}$$

$$x = -\frac{1}{2}$$

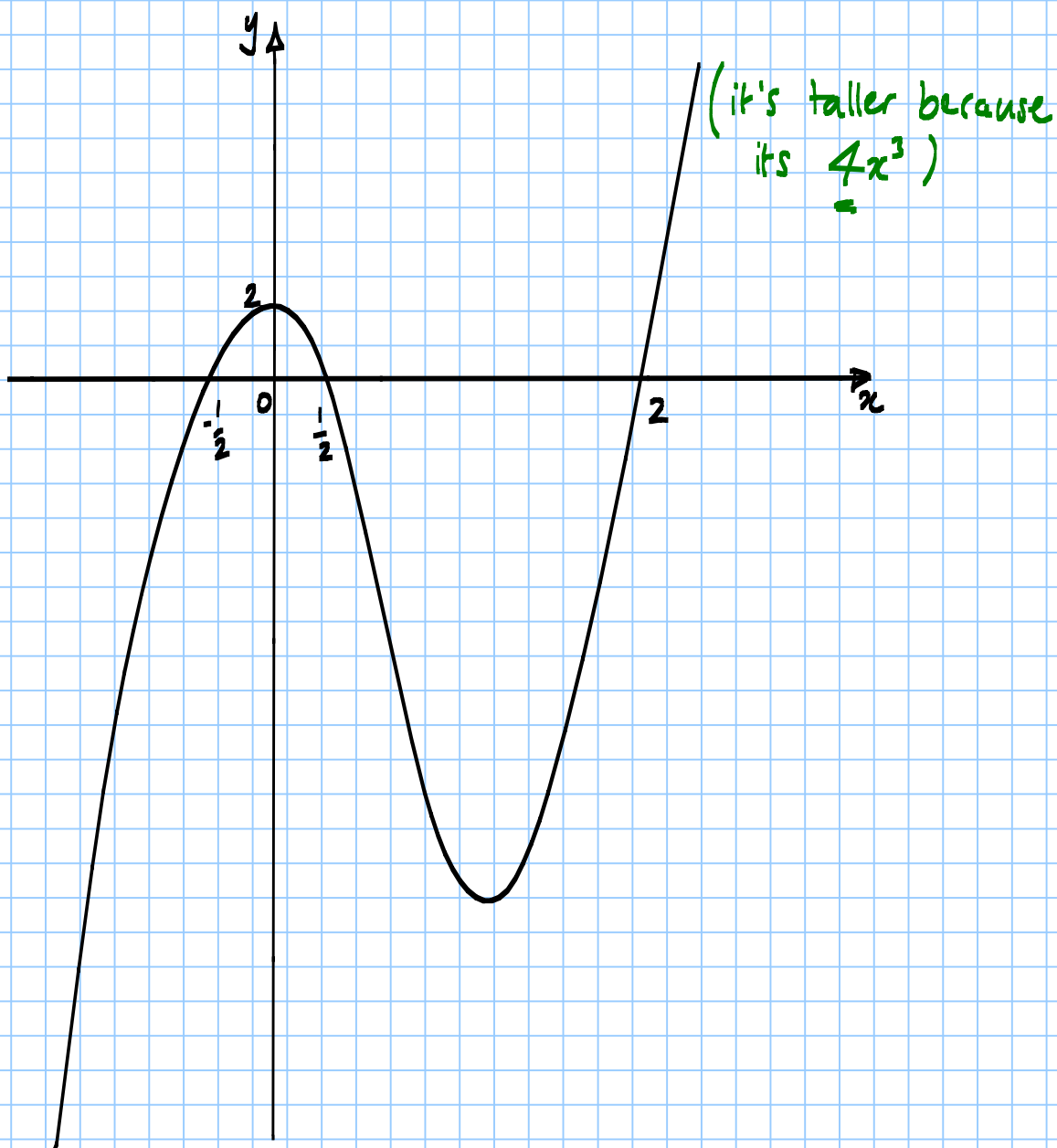
$$2x+1=0$$

$$2x = -1$$

$$x = -\frac{1}{2}$$

y-intercept  $-2 \times -1 \times 1 = 2$

$4x^3$  so  $\sim$  shape

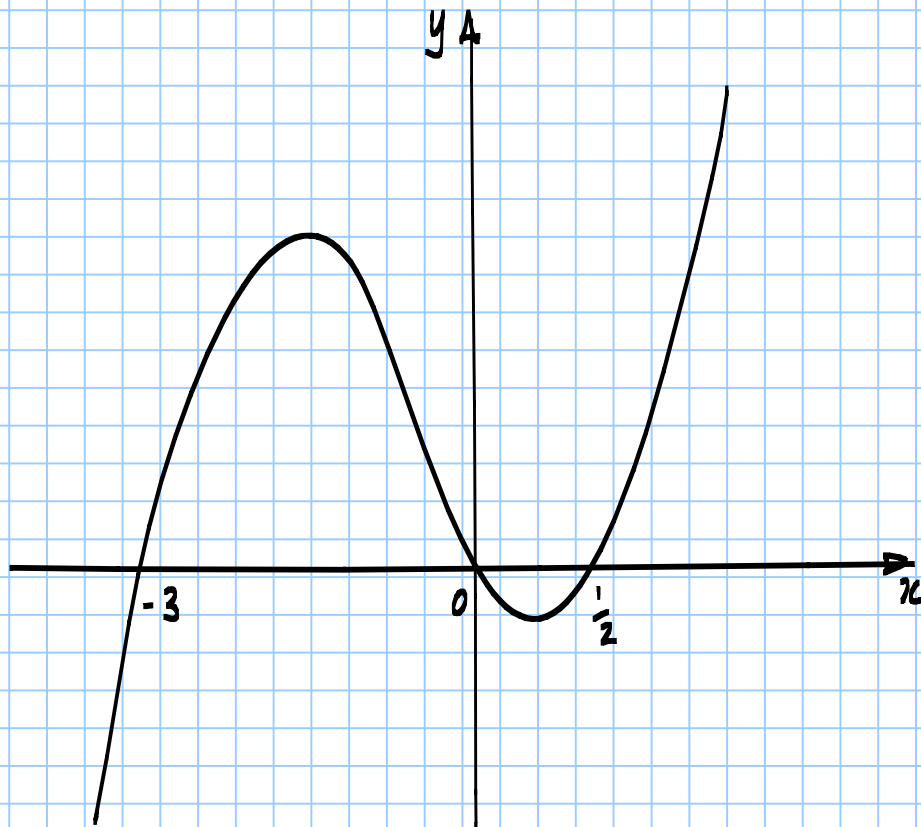


1j  $y = x(2x-1)(x+3)$

zeros at  $x=0$   $x=\frac{1}{2}$   $x=-3$

y-intercept at  $0x - 1 \times 3 = 0$

$2x^3$  so  $\sim$  shape

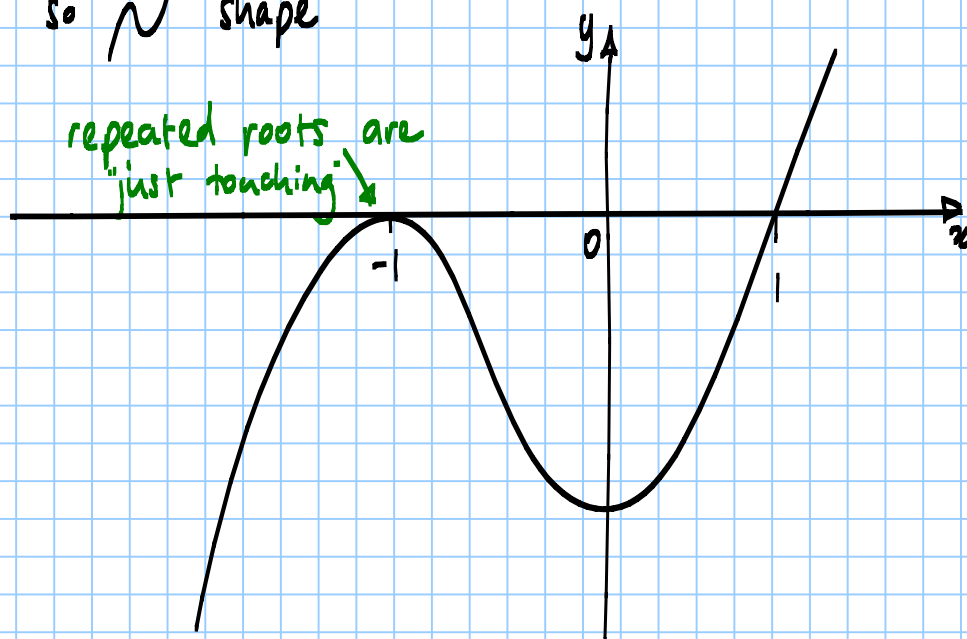


2a  $y = (x+1)^2(x-1)$  so  $y = (x+1)(x+1)(x-1)$

zeros at  $-1, -1, 1$  so roots are  $x=1$  and  $-1$  repeated.

y-intercept at  $1 \times 1 \times -1 = -1$

$x^3$  so  $\sim$  shape



26

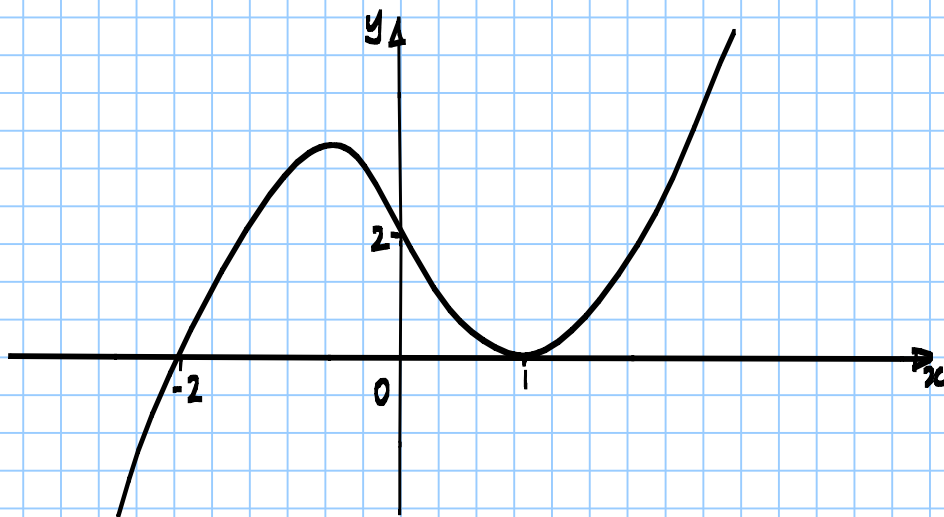
$$y = (x+2)(x-1)^2$$

$$\text{so } y = (x+2)(x-1)(x-1)$$

roots at  $x = -2$  and repeated root at  $x = 1$

y-intercept  $2 \times -1 \times -1 = 2$

$x^3$  so  $\sim$  shape



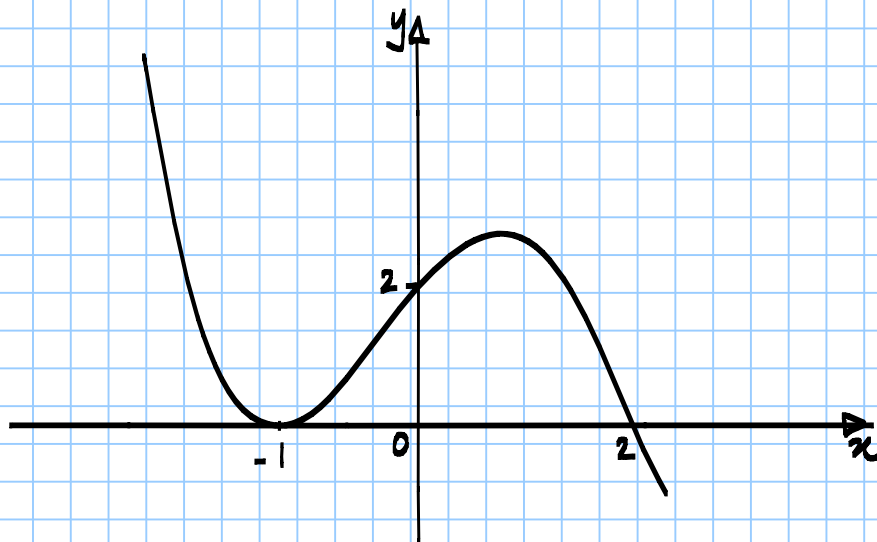
2c  $y = (2-x)(x+1)^2$

$$y = (2-x)(x+1)(x+1)$$

roots at  $x=2$  and repeated root at  $x=-1$

$$y\text{-intercept} = 2 \times 1 \times 1 = 2$$

$-x^3$  so  $\cap$  shape



2d

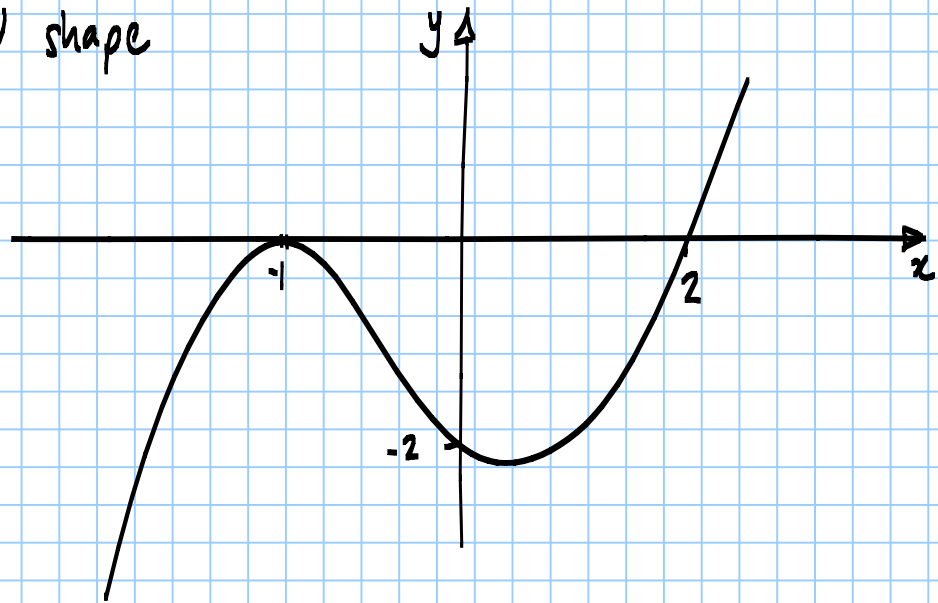
$$y = (x-2)(x+1)^2$$

$$y = (x-2)(\underline{x+1})(\underline{x+1})$$

roots at  $x=2$  and repeated root at  $x=-1$

y-intercept  $-2 \times 1 \times 1 = -2$

$x^3$  so  $\sim$  shape

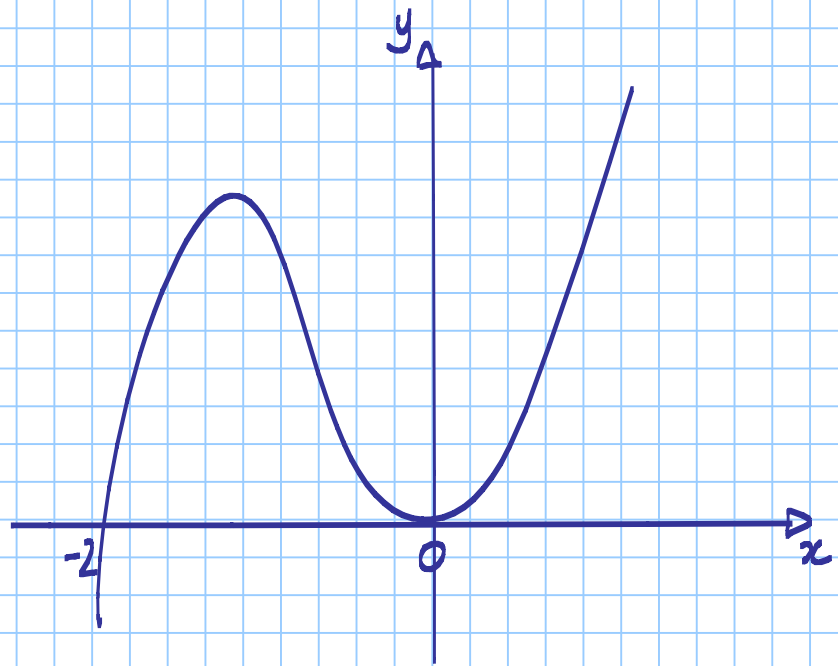


2e

$$y = x^2(x+2)$$

$x = 0$  repeated

$x = -2$



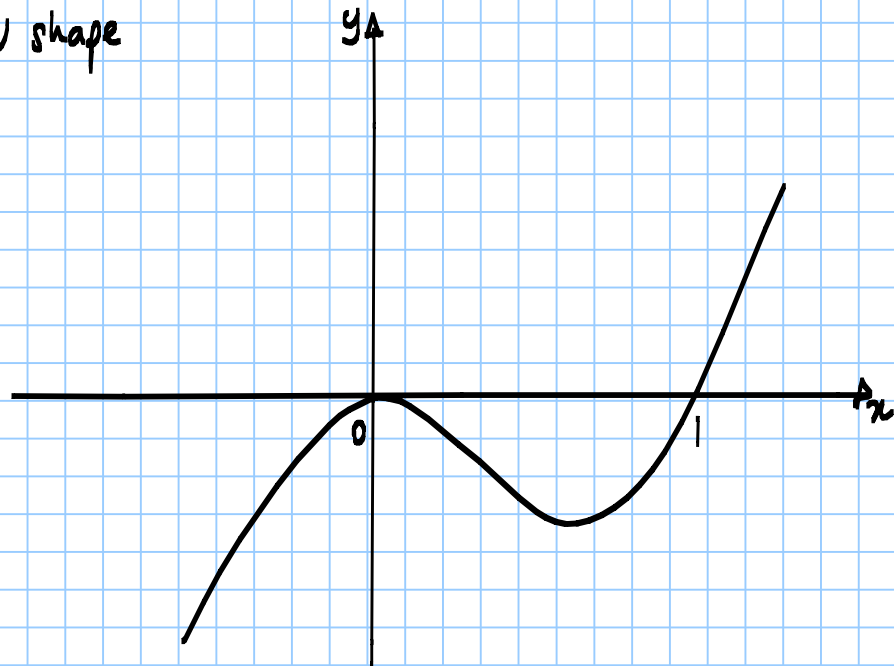
2f

$$y = (x-1)^2 x$$

roots  $x=1$  repeated  $x=0$

y-intercept  $= -1 \times -1 \times 0 = 0$

$x^3$  so  $\sim$  shape





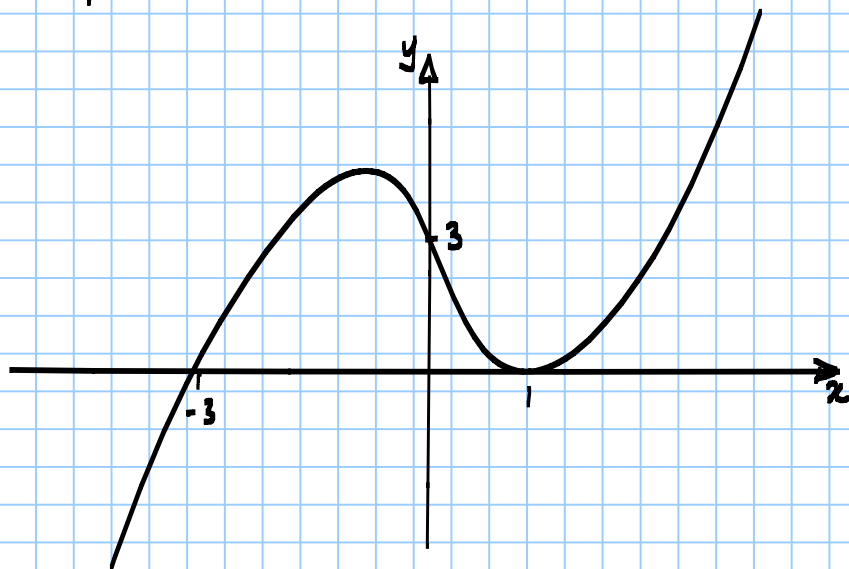
2g

$$y = (1-x)^2(3+x)$$

roots at  $x=1$  repeated and  $x=-3$

y-intercept at  $1 \times 1 \times 3 = 3$


$x^3$  so  $\sim$  shape

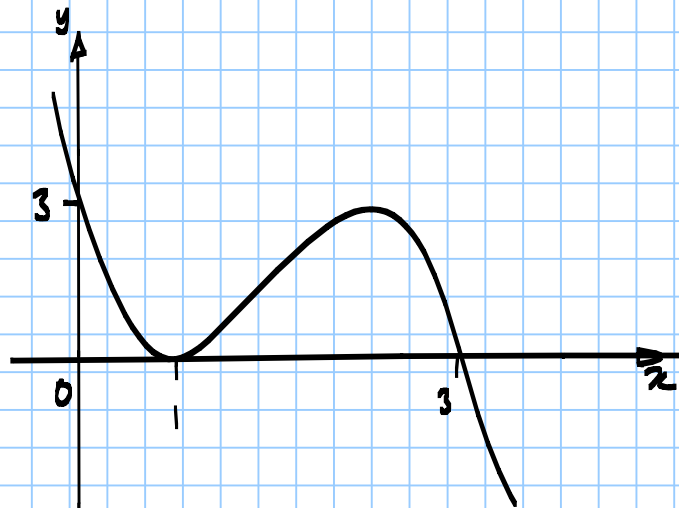


2h  $y = (x-1)^2(3-x)$

roots at  $x=1$  repeated &  $x=3$

y-intercept  $-1 \times -1 \times 3 = 3$

$-x^3$  so 



2:

2j

3a



3c

3d